



DV Cameras

With a digital video camera you can film your sister's wedding or create your answer to *King Kong*. We audition 12 of the latest cameras to find a new video star

Whether you're recording an important event in your life or shooting a low-budget movie masterpiece, you need a good video camera with the same basic attributes. You'll want good-quality video, ease of use and a battery that doesn't run out in the middle of filming.

This month we've tested 12 DV cameras that try to provide all these basics and more. Four are budget MiniDV cameras that cost from as little as £191 including VAT. Four are more advanced models that record higher-quality video and can also take reasonable still photographs.

There are many ways to record video besides MiniDV tapes. We've also tested a camera that can store over four hours of footage on a hard disk, and two that write directly to mini DVD discs. Finally, we've tested one of the latest cameras that can record high-definition video. Whatever and however you want to shoot, you're sure to find the ideal video camera here.

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CHOOSING A... DV CAMERA

Besides image and sound quality, the storage, battery life and connectivity of your camcorder are important. Here's what to look for

There is a huge range of digital camcorders on the market today. Storage formats, dimensions, interfaces and prices can vary immensely from one model to another. In this guide we'll explain what features to look out for before you buy.

SELF STORAGE

The cameras in this group use four different technologies to store video. MiniDV tapes can store 60 minutes of high-quality digital video. The tapes are inexpensive, costing around £3 each, and you can use them numerous times before the video quality deteriorates.

DVD camcorders have become more popular recently. They record to 8cm DVD media, most commonly DVD-R discs. These can cost as little as 25p per disc and hold 30 minutes of footage. DVD camcorders can produce DVD-R discs that can be played back in any compatible DVD player.

Canon's DC20 also records to DVD-RW discs that cost around £3, while the Hitachi's DZ-MV780 accepts DVD-RAM discs that cost about £6. These are double-sided and accommodate 30 minutes of footage on each side. Both types can be rewritten hundreds of times, but check your optical drive and DVD player for compatibility before you buy.

Finally, JVC's GZ-MG20 records to a built-in hard disk, which is similar to those found in hard disk MP3 players. It can store over four hours of high-quality video.

BATTERIES NOT INCLUDED

A video camera is of little use if it runs out of power half-way through the event you're filming. Most

cameras can run for at least an hour between charges, but only Panasonic's NV-GS150EB lasted over two hours. Extra batteries are available for around £30-50 depending on size. The table on page 167 shows the type of battery that comes with each camera, but many can be upgraded to use a larger power pack.

One key factor that affects battery life is whether you use the LCD display or the viewfinder when filming. Using the viewfinder increases battery life by around a third. Most camcorders have colour viewfinders, but some budget models use a black-and-white display. The JVC GR-X5 and GZ-MG20 have no viewfinder at all.

All the camcorders in this group have 2½" or larger LCD displays. These let you frame your shots with ease and are perfect for navigating option menus but they take their toll on battery life.

THREE COLOURS

Most of the camcorders on test use a charge-coupled device (CCD) sensor to capture the light that comes through the lens and turn it into digital video. The size and number of these sensors is critical to video performance. CCDs are often referred to by their size as a fraction of an inch or by the number of pixels they can capture. Sensors with more pixels do not necessarily guarantee better video quality, but larger CCDs are less susceptible to noise and tend to produce cleaner video footage.

It is also possible to use three CCDs in a single device. In this arrangement each sensor collects one colour: red, green or blue. The three are then combined to create a very sharp image with far

HOW WE TESTED

We tested each video camera in a variety of conditions. First we took each one to the roof of our offices in central London. With the camera on a tripod we recorded a few minutes of the skyline and busy streets below before testing the widescreen functions. We then took the camera off the tripod and zoomed in on distant objects to test the image stabilisation.

Next we tested each camera in our labs under artificial lighting. We used a tripod to record people moving around the office to test the response to sound and motion. Finally we darkened the room to test how well each camera functioned in low light.

We conducted our battery tests with each camera's LCD display turned on. Tapes and discs were changed when needed, but to conserve power we didn't rewind tapes or finalise discs.

more accurate colour reproduction than is possible using a single sensor. Both Panasonic's NV-GS150EB and JVC's GR-X5 use three CCDs.

THE CABLE GUY

Having recorded your video, you'll probably want to transfer it to your computer for editing. Most modern cameras can do this using FireWire or USB. Some cameras also have a FireWire input, so you can transfer the edited video back to tape.

All the cameras here have some kind of analogue video output so you can plug them directly into a TV. Some also have video inputs, which allow you to capture analogue video directly to MiniDV.

THE SOUND OF MUSIC

All the cameras on test support either 16-bit or Dolby Digital stereo audio, and we found that all could record dialogue clearly. The quality of recorded audio doesn't seem to increase with the cost of the camcorder.

If you want to record high-quality sound, look for a camcorder with an accessory shoe and microphone input. This will allow you to use a better-quality external microphone.

BLOW UP

Most of the camcorders in this group have some sort of widescreen mode. Letterboxed camcorders simply place black bars across the top and bottom of the image. This looks like widescreen, but it actually provides less information than a standard 4:3 picture.

Anamorphic camcorders work like DVD movies, squeezing the picture inwards to fit a wider view into the same space. When you play it back on your television it expands again to fill the rectangular shape of the screen. Be warned, though, that some anamorphic modes are much better than others. Our reviews explain which work best.

ONE HOUR PHOTO

Many of the video cameras here can also take still photographs. Like digital cameras they use memory cards for storage. None of the video cameras here can rival the quality of a decent digital camera, but our reviews explain which can produce passable photos.



▲ 16:9 anamorphic widescreen modes increase your camera's field of view, as this picture shows. Beware of letterbox modes that actually reduce the size of your image



BUDGET DV CAMERAS

PANASONIC
NV-GS17B

RATING ★★★★★

PRICE £191 inc VAT

SUPPLIER www.pixmania.co.ukDETAILS www.panasonic.co.uk

The NV-GS17B is the cheapest camcorder in the group, but it still shoots good-quality video and is easy to use, making it ideal for the novice.

FEATURES

The body of the GS17B is small and wide, which can cause problems for anyone with large hands. The black-and-white viewfinder extends well beyond the rear-mounted battery, though, making it easy to use. Beside it a small joystick controls the clearly laid-out menu system.

Through the menu you can activate image stabilisation and a letterboxed widescreen mode. The LCD screen is colourful and bright, but its vertical viewing angles are poor. A side switch changes the camcorder to manual mode and five preset shooting modes, including Sports and Portrait. There's also a manual focus option.

Other controls are logically placed. The zoom slider sits under the index finger and allows smooth control of the 24x optical zoom. It has an S-video output, but no analogue video or FireWire inputs.

PERFORMANCE

All the budget DV cameras in this group use 800,000-pixel CCDs, but the NV-GS17B does the best job with the captured video. It recorded plenty of detail in our outdoor test and realistic colour indoors, all without excessive noise.

Image stabilisation is better than that of any other budget camcorder. There's no infrared mode, though, so images are blurry in low light. The microphone recorded dialogue clearly.

Despite its small battery, the NV-GS17B ran for 106 minutes. A handy charger means you could charge up a spare battery while shooting.

VERDICT

If you won't shoot regularly in low light, the NV-GS17B is the best budget camcorder in this test. It captures detailed video and has good battery life. At this price it's a real bargain.

✓ Good-quality video for a very low price; great battery life

✗ No video light or IR mode; no FireWire or video inputs

SPECIFICATIONS MiniDV camcorder, 24x optical zoom, 0.8-megapixel CCD, 2½" LCD screen, FireWire and USB interfaces, weighs 410g, battery life 106 minutes

SAMSUNG
VP-D353

RATING ★★☆☆☆

PRICE £210 inc VAT

SUPPLIER www.be-direct.co.ukDETAILS www.samsung.com/uk

Samsung's VP-D353 doesn't look or feel as well designed as some models, but it has a range of options for filming in low light.

FEATURES

This boxy camcorder is the largest of the four budget models here, although this makes it more suitable for those with bigger hands. The controls are well positioned and comfortable to use. A set of dedicated playback buttons are positioned just above the LCD screen.

The LCD screen has poor vertical viewing angles and polarises the image if you aren't in the right place. The menu is clear and colourful and controlled by the volume rocker switch, making it easy to find the options you need.

The front of the camera holds both a pair of infrared LEDs and a standard lamp for filming in low light. You can either get colour shots by using the light and risk disturbing your subject, or black-and-white ones using infrared mode.

PERFORMANCE

Video quality was disappointing. In our outdoor test the bricks on nearby buildings lacked detail. Indoor video had a yellow tinge until we adjusted the white balance. Poor colour balance persisted, though, and images displayed a lot of noise. The image stabiliser works to a degree but was less effective than others. In contrast, the low-light options are impressive. We recorded decent video in very dark conditions, but there was some blur in fast motion or panning shots.

A Memory Stick card slot is built in, but with a maximum still image resolution of 800x600 it's hardly worth bothering with. The camera ran for a respectable 90 minutes, although it uses a large 800mAh battery to achieve this.

VERDICT

It's hard to recommend the VP-D353. Sony's HC19E is better in low light, and Panasonic's NV-GS17B is better for everything else.

✓ Video light and IR mode

✗ Disappointing video quality; no FireWire or video inputs

SPECIFICATIONS MiniDV camcorder, 20x optical zoom, 0.8-megapixel CCD, 2½" LCD screen, FireWire and USB interfaces, weighs 400g, battery life 90 minutes

SONY
DCR-HC19E

RATING ★★★☆☆

PRICE £228 inc VAT

SUPPLIER www.amazon.co.ukDETAILS www.sony.co.uk

The DCR-HC19E looks slender and stylish and feels great to use. However, it lacks certain basic features and the picture quality could be better.

FEATURES

This is the slimmest budget camcorder by just one millimetre, but it feels much smaller. The design is excellent, although tapes load from the bottom, which is a pain for tripod users. Controls are all easy to reach and very responsive.

A touch screen LCD controls the menu settings. This is sensibly laid out and provides easy access to commonly used features. The LCD itself is bright and colourful and has additional record and zoom controls on its edge. Alternatively there's a sliding black-and-white viewfinder that extends well beyond the battery.

No FireWire input or S-video outputs are provided. The built-in lens cover is handy, though.

PERFORMANCE

The DCR-HC19E's picture quality doesn't live up to its clever design. The outdoor tests showed a lack of detail in the brickwork on surrounding buildings. Video recorded indoors was acceptable but looked a little over-exposed. The picture exhibited far more noise than that recorded using Panasonic's NV-GS17B.

The Sony performed better than other budget devices in low light. Its Nightshot Plus setting uses an infrared light to produce good monochrome results. Image stabilisation worked acceptably with the 20x optical zoom, producing a steady image. Despite having only a 500mAh battery the camera ran for 101 minutes, so with a larger battery it should run for ages.

VERDICT

The DCR-HC19E's design is excellent and it's very easy to use, but its picture quality can't match that of Panasonic's NV-GS17B. If you want a camcorder that works well in low light, however, this is the best of the budget models.

✓ Good images in low light; excellent battery life; LCD touch screen

✗ No FireWire or video inputs; noisy video

SPECIFICATIONS MiniDV camcorder, 20x optical zoom, 0.8-megapixel CCD, 2½" LCD screen, FireWire and USB interfaces, weighs 400g, battery life 101 minutes



DV CAMERAS

**JVC
GR-D290**

RATING ★★★★★

PRICE £265 inc VAT

SUPPLIER www.electricaldiscountuk.co.ukDETAILS www.jvc.co.uk

JVC's GR-D290 is the most expensive budget MiniDV camcorder in this group, but you get a number of extra features for your money.

FEATURES

The D290 is the cheapest camera in this review that can capture analogue video to MiniDV using the A/V and S-video inputs provided. You can also transfer edited DV footage back to tape using the FireWire input.

When recording you also benefit from an anamorphic 16:9 widescreen mode. This looked distorted during shooting, as it's squeezed into the colour viewfinder or the LCD, both of which have a standard 4:3 aspect ratio. The LCD screen looks good but suffers from poor viewing angles.

The controls are straightforward to use, but the menu system is not as well thought out and is controlled by the playback buttons above the LCD. It has a wide range of options but no short cuts for frequently used features.

PERFORMANCE

The GR-D290 produced decent results in all our tests, recording plenty of detail both indoors and outside. Noise levels were acceptable and although colours looked a little yellow at times we were able to correct this using the manual controls. Overall the picture quality is good, but Panasonic's NV-GS17B is better.

A lamp is provided for use in low light. It consists of two LEDs and was just bright enough to illuminate our small test room. It produced fairly good results, but pans and fast motion looked blurred. The 700mAh battery kept the camera running for a disappointing 83 minutes.

VERDICT

The GR-D290's picture quality is decent, but it isn't the easiest camcorder to use. We'd recommend it for those who want anamorphic widescreen or video inputs, but otherwise the NV-GS17B is a better buy.

✓ Anamorphic widescreen; FireWire and video inputs; colour viewfinder

✗ Below-average battery life

SPECIFICATIONS MiniDV camcorder, 25x optical zoom, 0.8-megapixel CCD, 2½" LCD screen, FireWire and USB interfaces, weighs 430g, battery life 83 minutes

**CANON
MVX330i**

RATING ★★★★★

PRICE £390 inc VAT

SUPPLIER www.novatech.co.ukDETAILS www.canon.co.uk

The MVX330i is a well-designed camcorder with a wide range of features. It uses a high-resolution CCD that shoots good video in all situations.

FEATURES

The MVX330i is bigger than most cameras here. It's comfortable to use, though, and the added weight gives it stability when shooting.

The basic controls are well positioned. Opening the LCD screen reveals 10 buttons that provide instant control over commonly used features. There's also a card slot that accepts SD and MMC memory cards for storing still images.

In front of the LCD is the menu button and a small rocker switch. Folding the LCD screen flat makes it easy to navigate the clear menus. The rocker also adjusts recording levels and manual focus. The LCD screen itself is bright and colourful with acceptable viewing angles.

The MVX330i comes with FireWire in and out and S-video in and out. There's an accessory shoe on the top, but it can't draw power from the camcorder's battery.

PERFORMANCE

This camera produces significantly better video than the cheaper models. Our outdoor test was crisper, clearer and had bolder colours. It also benefited immensely from the anamorphic 16:9 widescreen setting. Indoors the results were equally pleasing, with little noise and good detail.

Low-light performance was less impressive, with plenty of noise and some blurring. The camera has a light that helps in very dark conditions, and above this is a flash for taking still photos with a maximum resolution of 1,280x960. The battery lasted for 93 minutes.

VERDICT

The MVX330i is a well-designed video camera that produces better video than cheaper models. If you can afford to pay a little more, though, Panasonic's NV-GS150EB is a better choice.

✓ Good video performance; adjustable viewfinder

✗ Powerless accessory shoe; low-resolution stills

SPECIFICATIONS MiniDV camcorder, 18x optical zoom, 1.3-megapixel CCD, 2½" LCD screen, USB and FireWire interfaces, weighs 500g, battery life 93 minutes

**PANASONIC
NV-GS150EB**

RATING ★★★★★

PRICE £464 inc VAT

SUPPLIER www.pixmania.co.ukDETAILS www.panasonic.co.uk

Panasonic's DV camera is in direct competition with Canon's MVX330i. However, with three CCDs inside the Panasonic's video is better.

FEATURES

The arrangement of controls matches that of the NV-GS17B. The four-way joystick controls the same clearly presented menu system, and a dial around the joystick selects between video, stills and playback modes. The battery is large but the colour viewfinder extends just far enough past it to be comfortable.

A powered accessory shoe is above the viewfinder. On the front of the camera is a flash for taking stills and a neat built-in lens cover. The LCD screen has an intelligent system that adjusts brightness according to the image displayed, increasing contrast levels where necessary.

PERFORMANCE

The NV-GS150EB records superb video. Its three CCDs produce a more accurate colour palette and a realism that single-CCD devices can't match. Both our indoor and outdoor tests showed minimal noise, and the outdoor tests benefited from the anamorphic widescreen mode.

Unfortunately, you can't use widescreen and image stabilisation at the same time. When engaged the stabiliser does a good job of taming camera shake from the 10x optical zoom. The camera worked well in gloomy conditions, but with no built-in light or infrared mode, motion became very blurred in really low light.

Still photos suffer from more noise than those taken on the MVX330i, but the higher resolution of 1,760x1,320 allows for more detail. The battery lasted a whopping 133 minutes.

VERDICT

The NV-GS150EB's video quality is on a par with that of the JVC GR-X5, but it costs almost £250 less. Its design is good, it has an abundance of features, and it wins our Best Buy award.

✓ Three CCDs at an incredibly low price; great battery life

✗ Widescreen mode deactivates image stabilisation

SPECIFICATIONS MiniDV camcorder, 10x optical zoom, 3x 0.8-megapixel CCDs, 2½" LCD screen, FireWire and USB interfaces, weighs 420g, battery life 133 minutes



CANON MVX4i

RATING ★★★★★

PRICE £689 inc VAT

SUPPLIER www.prcdirect.co.uk

DETAILS www.canon.co.uk

The MVX4i is a stylish MiniDV camcorder. Its massive 4.3-megapixel CCD allows it to double as a respectable stills camera as well.

FEATURES

The MVX4i's upright design makes it more compact than most of the MiniDV camcorders in the group. The zoom slider, photo shutter button and video-to-photo select switch sit under your forefinger, with the mode select dial and menu rocker button under your thumb.

The LCD screen is of a high standard and the menu system is well laid out and easy to navigate. There's no accessory shoe on top – just a handy direct print button for still photos.

The large lens has no built-in cover, but there is a video light and a flash for still photos. An SD card slot is provided for storage, but with a maximum resolution of 2,304x1,736 the included 16MB card won't hold many snaps.

PERFORMANCE

With its single large CCD the MVX4i can't really compete with three-CCD devices, but it does produce decent video with very little noise. The results were good in our outdoor tests, with sharper edges and more convincing colour than video from the MVX330i. The widescreen mode was disappointing, though, with little increase in the recorded view. Indoors we were amazed at the level of colour accuracy from a single CCD. Test results in low light were also impressive, and the video light helped in very dark conditions.

Stills were well defined with great detail. It's not as good as a decent dedicated camera, but the MVX4i is capable of taking some very decent photographs. The battery ran for 109 minutes.

VERDICT

If you want a single compact device that takes both decent video and still photos, this is a great choice. It's expensive, though, and the cheaper Panasonic NV-GS150EB records better video.

✓ Compact design; takes high-resolution still photos

✗ Poor widescreen mode; video can't compete with three-CCD devices

SPECIFICATIONS MiniDV camcorder, 10x optical zoom, 4.3-megapixel CCD, 2½" LCD screen, USB and FireWire interfaces, weighs 410g, battery life 109 minutes



JVC GR-X5

RATING ★★★★★

PRICE £705 inc VAT

SUPPLIER www.dabs.com

DETAILS www.jvc.co.uk

The GR-X5 stands out thanks to a black chassis and unusual shape. With three large CCDs inside it produces good video and still photographs.

FEATURES

The GR-X5 is shaped unlike any other camcorder we've seen. It's almost a cube with rounded edges, but it's surprisingly comfortable to hold. The LCD screen folds up from the rear of the camera and sits upright above the body. Unfortunately, we found that it tended to get in the way of the record button. It can be reversed and folded flat against the back, but this blocks access to the playback and menu controls.

Stills have a maximum resolution of 2,560x1,920, and an SD card slot and flash are provided. Below the flash is a useful little dial for setting the focus and exposure levels manually.

An accessory shoe sits just above the lens, but it can't draw power from the battery. This is no surprise as the 700mAh battery lasted only a meagre 48 minutes in our tests. You could fit a larger battery but it would protrude awkwardly from its recess on the lower left-hand side.

PERFORMANCE

With three large CCDs we expected the GR-X5's video to be stunning. It outperformed even the Panasonic NV-GS150EB, showing less noise in our indoor tests. Video from our outdoor test was sharper still, and detail was excellent. The footage looked slightly overexposed at first, but we corrected this by tweaking the settings. It's not ideal for those who want to use only the automatic mode, but if you're prepared to play around, you'll get excellent results. Photos had good colour balance and detail. As a stills camera it's on a par with Canon's MVX4i.

VERDICT

The GR-X5 produces great video and isn't a bad stills camera. Its battery life is woeful, though, making it very hard to recommend.

✓ Brilliant, realistic video; good still photos

✗ Appalling battery life; unusually placed LCD screen

SPECIFICATIONS MiniDV camcorder, 10x optical zoom, 3x 1.3-megapixel CCDs, 2½" LCD screen, FireWire and USB interfaces, weighs 510g, battery life 48 minutes

HARD DISK DV CAMERA



JVC GZ-MG20

RATING ★★★★★

PRICE £351 inc VAT

SUPPLIER www.cameras2u.com

DETAILS www.jvc.co.uk

We reviewed this model in *What's New, Shopper* November 2005 and gave it our Best Buy award. We've been using it regularly ever since and still think it's great for casual use.

FEATURES

Hard disk camcorders make a lot of sense if you plan to edit your footage on a computer. Simply plug the GZ-MG20 into any USB2 port and you can drag and drop video to your computer for editing. The camera can store four-and-a-half hours of video at its highest quality setting.

Although it's shaped like a traditional camcorder, the GZ-MG20 is the smallest and lightest device here. The battery lasted for just 65 minutes, but there is space to fit a larger pack.

With no viewfinder you have to use the LCD display to frame shots. It hinges out from the left-hand side, revealing the other controls and the S-video output. A small joystick controls the menu system and playback. Playback is easy, as you can browse through thumbnails of each clip and select the one you want.

PERFORMANCE

Unfortunately the GZ-MG20's video quality is only on a par with the budget MiniDV camcorders. There's little noise, but video appears soft and lacks detail. We could also see compression artefacts around moving objects.

Image stabilisation wasn't very good, and the device's light weight doesn't help, resulting in a jittery picture when the zoom lens is moving. Performance in low light was acceptable, but the built-in light could have been stronger.

VERDICT

The GZ-MG20's image quality isn't perfect, but it's supremely easy to use. It's ideal for occasional users, as you could store an entire year's worth of birthday parties or events and transfer them easily to a PC. At this price it's a good buy.

✓ Four-and-a-half hours of video storage; very compact

✗ Video quality not perfect; below-average battery life

SPECIFICATIONS Hard disk camcorder, 25x optical zoom, 0.8-megapixel CCD, 2½" LCD screen, USB interface, weighs 380g, battery life 65 minutes



DVD DV CAMERAS

HITACHI
DZ-MV780

RATING ★★★★★

PRICE £365 inc VAT

SUPPLIER www.rgbdirect.co.ukDETAILS www.hitachi.co.uk

The DZ-MV780 is about as cheap as DVD camcorders get, and although its video quality is nothing special it has a great widescreen mode.

FEATURES

This classic design has certain advantages, as its battery is mounted conveniently on the rear of the unit. The 680mAh pack lasts for only 58 minutes due to the power-hungry DVD drive, but there's space for a larger replacement. A powered accessory shoe is provided.

The DZ-MV780 records to DVD-R and DVD-RAM but not DVD-RW. All the basic controls are exactly where you'd expect them to be. A four-way joypad above the LCD controls the menu, which is uncluttered and easy to use.

The widescreen mode is one of the best we've seen and is particularly appropriate for recording to DVD. Audio is recorded in Dolby Digital stereo for compatibility with DVD players.

PERFORMANCE

Unfortunately the DZ-MV780's video can't match that from Canon's DC20. Noise isn't a problem, but the video lacks detail and definition on edges, and we could see artefacts from the MPEG2 compression. It's roughly equivalent to that of the better budget MiniDV devices.

The image stabiliser worked well and kept the image steady even at maximum zoom. Performance was poor in low light, though, with increased noise and motion blur. There's no light or infrared mode, so shooting in very dark conditions is out of the question.

The 1.2-megapixel still photos had muted colours and considerable noise. They may suffice for the web, but they're not of printable quality.

VERDICT

This costs over £100 less than the DC20, but the drop in video quality is very noticeable. It's not a great video camera, but you'll struggle to find a cheaper way to shoot straight to DVD.

✓ Cheap for a DVD camcorder; great widescreen capabilities

✗ Poor video compared with similarly priced MiniDV devices; short battery life

SPECIFICATIONS DVD camcorder, 10x optical zoom, 1.3-megapixel CCD, 2½" LCD screen, USB interface, weighs 420g, battery life 58 minutes

CANON
DC20

RATING ★★★★★

PRICE £469 inc VAT

SUPPLIER www.prcdirect.co.ukDETAILS www.canon.co.uk

The DC20 is very slim and looks great. It records directly to DVD-R and DVD-RW.

FEATURES

A DVD drive is smaller and lighter than a MiniDV tape deck. This allows the DC20 to be both compact and pleasing to the eye. The drive itself accepts 8cm DVD-R and DVD-RW discs. The curved rear of the body fitted our big hands perfectly and there are dedicated buttons for every function you'll use often. A small joystick by the LCD screen controls the menu system.

The viewfinder is angled conveniently upwards from the body, but it doesn't extend outwards. The slim chassis leaves no room for an accessory shoe, although all the necessary outputs are present. There's also a video light, a flash and a handy built-in lens cover.

The battery pack is tucked away beneath the LCD, so you can't fit a larger battery. The camera ran for 64 minutes in our tests.

PERFORMANCE

The DC20 produces excellent video on a par with that of the MVX330i. It's sharp with impressive detail. The camera supports a widescreen mode, but it crops the top and bottom of the picture while extending the horizontal view only marginally. Low-light performance was adequate, displaying the usual amounts of noise, and the built-in light helps when shooting in the dark.

Still photographs have a maximum resolution of 1,632x1,224. Detail levels are acceptable and colours are bright and clear, with only a small amount of noise. Photos can be stored on a DVD or MiniSD card.

VERDICT

The DC20 is a slender and well-designed video camera that's ideal for anyone who wants to point, shoot and watch with little fuss. It can also take decent still photographs. It's the best DVD camcorder here, although it is a bit pricy.

✓ High-quality video; very compact

✗ Short battery life; poor widescreen mode

SPECIFICATIONS DVD camcorder, 10x optical zoom, 2.2-megapixel CCD, 2½" LCD screen, USB interface, weighs 410g, battery life 64 minutes

HIGH-DEFINITION DV CAMERA

SONY
HDR-HC1E

RATING ★★★★★

PRICE £1,055 inc VAT

SUPPLIER www.pixmania.co.ukDETAILS www.sony.co.uk

We originally reviewed the HDR-HC1E in *What's New, Shopper* January 2006. It's very expensive but produces great videos and is a delight to use.

FEATURES

High-definition video is usually recorded in widescreen, so the HDR-HC1E has a widescreen display to accommodate this. Like all Sony camcorders it has a straightforward touch screen menu system. The high-resolution eyepiece can be angled upwards for ease of use.

HD video is captured to standard MiniDV tapes. Improvements in compression technology mean you can still squeeze 60 minutes of video on each tape. You will need to use fresh tapes, though, as this compression can cause errors on older, worn cassettes. The big 1300mAh battery runs the camera for a respectable 95 minutes.

All the usual ports are present, along with a component output that enables you to play HD video directly on an HD TV. This may prove a popular choice as editing HD video requires expensive software and a powerful computer.

PERFORMANCE

The HDR-HC1E produces the highest-quality video we've seen from a consumer video camera. We were blown away by the detail in our tests. Its colour reproduction rivals that of the triple-CCD models in the group. The CMOS sensor even produces surprisingly decent low-light video, and there's a NightShot infrared mode for use in really dark conditions.

VERDICT

New technologies are always expensive, but unfortunately that once-in-a-lifetime event isn't going to wait for prices to settle down. If you want the best-quality video available today, the HDR-HC1E is the only choice. However, you'll need to buy expensive high-definition editing software to make the most of it (see our Labs test of video-editing software on page 200).

✓ Stunning HD video; great design and build quality

✗ Very expensive

SPECIFICATIONS HDV MiniDV camcorder, 10x optical zoom, 2.9-megapixel CMOS, 2.7" LCD screen, FireWire and USB interfaces, weighs 680g, battery life 95 minutes



BUDGET DV CAMERAS

DV CAMERAS

MANUFACTURER	PANASONIC 	SAMSUNG	SONY	JVC	CANON	PANASONIC 	CANON	JVC
Model	NV-GS17B	VP-D353	DCR-HC19E	GR-D290	MVX330i	NV-GS150EB	MVX4i	GR-X5
Rating	★★★★★	★★	★★★	★★★★	★★★★★	★★★★★	★★★★	★★★
CCD pixels (physical size)	0.8-megapixel (1/6")	0.8-megapixel (1/6")	0.8-megapixel (1/6")	0.8-megapixel (1/6")	1.3-megapixel (1/4.5")	3x 0.8-megapixel (1/6")	4.3-megapixel (1/2.8")	3x 1.3-megapixel (1/4.5")
Optical/digital zoom	24x/800x	20x/900x	20x/800x	25x/800x	18x/360x	10x/500x	10x/200x	10x/300x
Widescreen mode	Letterbox	None	Letterbox	Anamorphic	Anamorphic	Anamorphic	Anamorphic	Anamorphic
LCD screen size	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Viewfinder	Black and white	Black and white	Black and white	Colour	Colour	Colour	Colour	None
Video lamp/camera flash	No/no	Yes/no	No/no	Yes/no	No/yes	No/yes	Yes/yes	No/yes
Sound	16-bit stereo	16-bit stereo	16-bit stereo	16-bit stereo	16-bit stereo	16-bit stereo	16-bit stereo	16-bit stereo
Memory slot (card supplied)	None	MS (none)	None	SD/MMC (16MB MMC)	SD/MMC (16MB MMC)	SD (none)	SD (16MB SD)	SD (32MB SD)
Video recording format	DV	DV	DV	DV	DV	DV	DV	DV
Video recording media	MiniDV cassette	MiniDV cassette	MiniDV cassette	MiniDV cassette	MiniDV cassette	MiniDV cassette	MiniDV cassette	MiniDV cassette
Interface terminals	FireWire out, USB, A/V out, S-video out	FireWire out, USB, A/V out, S-video out, mic	FireWire out, USB, A/V out	FireWire in/out, USB, A/V in/out, S-video in/out, mic	FireWire in/out, USB, A/V in/out, S-video in/out, mic	FireWire in/out, USB, A/V out, S-video out, mic	FireWire in/out, USB, A/V in/out, S-video in/out, mic	FireWire in/out, USB, A/V in/out, S-video in/out, mic, headphones
Other connections	None	Charge jack	Charge jack, accessory shoe	Charge jack	Charge jack, accessory shoe	Accessory shoe	Charge jack	Charge jack
Battery type	Li-ion 7.2V 640mAh	Li-ion 7.4V 800mAh	Li-ion 7.2V 500mAh	Li-ion 7.2V 700mAh	Li-ion 7.4V 720mAh	Li-ion 7.2V 1150mAh	Li-ion 7.4V 850mAh	Li-ion 7.2V 700mAh
Battery life	106 minutes	90 minutes	101 minutes	83 minutes	93 minutes	133 minutes	109 minutes	48 minutes
Battery charging position	Charger	Camera	Camera	Camera	Camera	Charger	Camera	Camera
Dimensions (HxWxD)	81x63x114mm	92x64x118mm	90x55x112mm	94x56x112mm	78x72x131mm	73x71x126mm	101x51x102mm	89x88x93mm
Weight	410g	400g	400g	430g	500g	420g	410g	510g
Warranty	One year	One year	One year	One year	One year	One year	One year	One year
Price including VAT	£191	£210	£228	£265	£390	£464	£689	£705
Supplier	www.pixmania.co.uk	www.be-direct.co.uk	www.amazon.co.uk	www.electricaldiscountuk.co.uk	www.novatech.co.uk	www.pixmania.co.uk	www.prcdirect.co.uk	www.dabs.com
Supplier phone	08700 118117	08707 877867	Web only	08703 333980	08701 120612	08700 118117	08707 772323	Web only
Details	www.panasonic.co.uk	www.samsung.com/uk	www.sony.co.uk	www.jvc.co.uk	www.canon.co.uk	www.panasonic.co.uk	www.canon.co.uk	www.jvc.co.uk

HARD DISK CAMERA

DVD DV CAMERAS

HD CAMERA

MANUFACTURER	JVC	HITACHI	CANON	SONY 
Model	GZ-MG20	DZ-MV780	DC20	HDR-HC1E
Rating	★★★★★	★★★	★★★★	★★★★
CCD pixels (physical size)	0.8-megapixel (1/6")	1.3-megapixel (1/4.5")	2.2-megapixel (1/3.9")	2.9-megapixel (1/3")
Optical/digital zoom	25x/800x	10x/240x	10x/200x	10x/120x
Widescreen mode	Anamorphic	Anamorphic	Anamorphic	Native
LCD screen size	2 1/2"	2 1/2"	2 1/2"	2.7"
Viewfinder	None	Colour	Colour	Colour
Video lamp/camera flash	Yes/no	No/no	Yes/yes	No/yes
Sound	16-bit stereo	Dolby Digital stereo	Dolby Digital stereo	16-bit stereo
Memory slot (card supplied)	SD (none)	SD (none)	MiniSD (none)	MS Pro/Duo (16MB MS Duo)
Video recording format	MPEG2	MPEG2	MPEG2	HDV 1080i
Video recording media	Hard disk	DVD-R, DVD-RAM	DVD-R, DVD-RW	MiniDV cassette
Interface terminals	USB, A/V out, S-video out	USB, A/V out, S-video out, mic	USB, A/V out, S-video out	FireWire in/out, USB, A/V out, S-video out, component out, mic, headphones
Other connections	Charge jack	Accessory shoe	Charge jack	Charge jack, accessory shoe
Battery type	Li-ion 7.2V 700mAh	Li-ion 7.2V 680mAh	Li-ion 7.4V 850mAh	Li-ion 7.2V 1300mAh
Battery life	65 minutes	58 minutes	64 minutes	95 minutes
Battery charging position	Camera	Charger	Camera	Camera
Dimensions (HxWxD)	70x67x109mm	86x51x123mm	86x47x122mm	94x188x71mm
Weight	380g	420g	410g	680g
Warranty	One year	One year	One year	One year
Price including VAT	£351	£365	£469	£1,055
Supplier	www.cameras2u.com	www.rgbdirect.co.uk	www.prcdirect.co.uk	www.pixmania.co.uk
Supplier phone	0845 3302688	020 8533 1708	08707 772323	08700 118117
Details	www.jvc.co.uk	www.hitachi.co.uk	www.canon.co.uk	www.sony.co.uk

LABS VERDICT
DV CAMERAS

All the cameras in this group capture decent video, and many of them are well priced. Four, however, really stand out. JVC's GZ-MG20's video quality isn't perfect, but its ability to store over four hours of video is exceptional.

If you don't need the huge storage of a hard disk, there are three great MiniDV cameras. Panasonic's NV-GS17B is the cheapest here, but it produces good video, is simple to use and has good battery life. It's our Best Budget Buy.

Panasonic's NV-GS150EB is also impressive. With three CCDs it produces video quality that can't be beaten for under £500. It's also easy to use and wins our Best Buy award.

Finally, if you need the best video quality available, we'd recommend Sony's HDR-HC1E. It produces superlative video and is very well made, but sadly the price of high definition is over £1,000. It wins a Most Desirable award. 

PANASONIC
NV-GS150EBPANASONIC
NV-GS17BSONY
HDR-HC1E